

CLAIMS

We claim:

1. A device for fixating a bone comprising:
 - a head portion having an injection site for removably attaching an injection device to said injection site;
 - a shaft portion having a plurality of threads formed there-around and terminating at a tip portion.
 - a cannula extending about a length of said shaft, from said injection site on said head portion into said shaft portion substantially along a center-line within said shaft portion; and at least one slot extending outwardly from said cannula.
2. The device in accordance with claim 1 wherein said at least one slot comprises two slots, one which is disposed proximate said head portion, and a second which is disposed proximate said tip portion.
3. The device in accordance with claim 2 wherein said cannula has a cross sectional area and each of said slots has a cross-sectional area, wherein said cross-sectional area of said cannula is less than said cross-sectional area of each of said plurality of slots.
4. The device in accordance with claim 1, wherein said cannula extends from said injection site on said head portion through said shaft portion and said tip portion.
5. The device in accordance with claim 1, wherein said head further includes an engagement means for engaging and turning said device for insertion into a bone.
6. The device in accordance with claim 1, wherein said injection site further includes means for engaging and turning said device for insertion into a bone.

1 7. The device in accordance with claim 6, wherein said head portion further includes an
2 indicator to indicate the orientation of at least one of said at least one slot.

1 8. The device in accordance with claim 6, wherein said head portion further includes an
2 indicator to indicate the orientation of at least one of said at least one slot.

1 9. A bone screw for attaching to bone comprising:
2 a head portion having an attachment means for attaching an injection device and an
3 engagement means for engaging with a means for inserting said screw;
4 a shaft portion having a cylindrical length, wherein a plurality of threads are formed
5 around a threaded portion of said cylindrical length and wherein said shaft evidences at least one
6 delivery port;
7 a tip portion, wherein said plurality of threads terminate at said tip portion.

1 10. A bone screw for attaching to bone comprising:
2 a head portion having an attachment means for attaching an injection device and an
3 engagement means for engaging with a means for inserting said screw;
4 a shaft portion having a cylindrical length, wherein a plurality of threads are formed
5 around a threaded portion of said cylindrical length;
6 a tip portion, wherein said plurality of threads terminate at said tip portion; and
7 at least one slot positioned along said shaft to aid in delivery of an injectable material to
8 the bone.

1 11. A bone screw in accordance with claim 10 wherein said attachment means is a recess
2 formed in said head portion, wherein said recess is threaded for -threadably attaching with an
3 injection device.

1 12. A bone screw in accordance with claim 10 further comprising a coupling assembly for
2 attaching a fixation device to said head portion of said screw.

1 13. A bone screw in accordance with claim 10 further comprising a cannula for delivering
2 said injectable material from said head portion to said slot.

1 14. A bone screw in accordance with claim 13 further comprising a plurality of slots, wherein
2 said slots extend radially outward from said cannula.

34 1 15. A bone screw in accordance with claim 13 wherein said tip portion is configured with
2 opening which communicates with said cannula.

16. A bone screw in accordance with claim 13 wherein said top portion is closed.

17. The bone screw in accordance with claim 14 wherein said slots are suitably positioned
along said shaft to facilitate optimum fixation strength for the screw.

18. The bone screw in accordance with claim 14 wherein said screw further includes an
adapter device configured to force cement through said cannula and out of said slots.

19. The bone screw in accordance with claim 14 where said screw further includes a plug for
2 securing said cannula after insertion of an injectable material.

1 20. A method for securing a bone screw to bone comprising the steps of:
2 drilling a pilot hole through a cortical layer of a bone;
3 inserting a bone screw through said pilot hole by turning said bone screw to engage a
4 plurality of teeth formed on said screw with said pilot hole;
5 attaching an injection device containing injectable material to a head portion of said
6 screw; and

1 injecting said injectable material through a cannula and a plurality of slots formed in said
2 screw.

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